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SIGMA XI QUARTERLY

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Volume IV

JUNE, 1916

Number 2

THE SOCIETY AND THE QUARTERLY

Both editors and publishers tender apologies for the unfortunate but unavoidable delay in the appearance of the March and June numbers of the **QUARTERLY**. There is reason to think that the difficulties are eliminated and future numbers will appear on time.

Chapter secretaries are reminded that mailing lists for the coming academic year should be sent in as early as possible in September so that they may be used in forwarding copies of the fall number which appears at the end of that month.

At the call of President Howe the Executive Committee of the Society met in Cleveland, Ohio, on May 20, 1916. A private parlor at the University Club was secured for the use of the Committee and continuous session was held that day except for a brief but very delightful automobile trip around the city after lunch. Much important business was transacted, a full report of which will be published in the September **QUARTERLY**. It would be of advantage to the Society if each chapter should arrange to hold a business session early in the fall at which the general measures formulated by the Executive Committee for consideration at the annual convention next winter might be fully discussed. The pages of the December **QUARTERLY** will be open for the publication of chapter or individual opinions on matters pending or to be presented at the convention. In order that the midwinter number shall reach members before the holiday vacation it is mailed by December 1 and manuscript for it is sent the publishers by November 1.

THE HISTORY AND AIMS OF THE SOCIETY OF THE SIGMA XI

CHARLES S. HOWE

President of the Society

In all ages men of similar tastes have united themselves into organizations for social, political, patriotic, and other purposes. The Knights Templars, the Knights of St. John, the Vehmgericht, are examples of organizations which existed in the middle ages. The Knights of Pythias, the Odd Fellows, Tammany Hall, and many others are examples of more modern societies. It is not to be wondered at, therefore, that American college students should organize themselves into societies, according to their various characteristics and tastes, and that these should be more or less secret. There were probably many organizations of young men in American colleges before the present Greek-letter societies were formed, but their names have not come down to us and probably most of them were not secret.

The first secret Greek-letter society was founded at the College of William and Mary, Williamsburg, Virginia, in 1776 and was called the Phi Beta Kappa. It was formed for social and literary purposes and held frequent meetings. In 1779 it authorized the establishment of branches at Yale and Harvard and the next year ceased its own existence on account of the Revolutionary War. The chapter at Yale was founded in 1780 and the chapter at Harvard in 1781. These two chapters formed the chapter at Dartmouth in 1787. This was the beginning of the honorary society which is now non-secret and which exists in most of the well-known academic colleges.

Many other honorary and scholarship fraternities have been established, there being now fifteen of these with chapters in various colleges and universities. Some of them are purely scholarship organizations whose membership is open to any student; others admit only those from some particular department, as engineering, oratory, law, etc. In some the sole requirement for admission is scholarship, while in others the candidate's social qualities are taken into account as well as his scholastic standing.

Address delivered at the installation of the District of Columbia Chapter in Washington, D. C., February 19, 1916.

Phi Beta Kappa represents scholarship in the academic college. This organization has refused to admit scientific schools to membership and hence it has seemed desirable to establish a fraternity in engineering and scientific institution departments which will represent in them what Phi Beta Kappa stands for in the literary departments of the older colleges. With this object in view the Society of the Sigma Xi was organized.

The history of our Society is extremely interesting. A few years ago Professor Henry B. Ward, of the University of Illinois, published a *Quarter Century History* of the organization. As most of the members of this Alumni Chapter graduated from college before this history was issued, I wish to draw somewhat fully upon it in order to give you some idea of the various stages through which the organization has passed and the work which it is trying to do today.

New movements are always slow in growth and frequently depend in no slight degree upon things which have gone before. Usually the far-sighted vision of one man inaugurates a movement which, though it may never come to full growth in his day, receives an impetus which, through the assistance of others, finally is sufficient to launch the project and steer its course. In the early days of American colleges very little science was taught. At the time the Phi Beta Kappa was founded no science was required for admission to any college and in most colleges there were no scientific courses offered. Even as late as 1865 no college required any branch of science for admission and but few scientific studies were open to the students. Only one or two institutions offered any laboratory work even where formal instruction by means of lectures or recitations was given. It is evident that under these conditions no honorary scientific society could be established or maintained in any American university. But the establishment of engineering colleges and the introduction of natural and physical science in most of our higher institutions of learning soon produced a great change. While at first these subjects were regarded with suspicion and the professors of the old-time academic branches looked askance at the new men who were spending their time in laboratories, yet these new subjects gradually won their way and forced the advocates of classical training to acknowledge that they were worthy of a place in the college curriculum, and that their professors were students in the most profound sense of that term.

Doubtless many persons had thought that an honorary fraternity should be formed which would bind together the students in scientific subjects in some such way as the Phi Beta Kappa binds together the honor men in academic colleges. But Professor Henry S. Williams of Cornell University seems to have been the first to take definite steps to bring this about. In 1883, or perhaps before, he discussed the need of such an honorary society. In 1886 he organized a group of geological students and soon after drew up a plan for an organization to be called the Society of Modern Scientists. The preamble of this organization is interesting because it is the first statement expressing the desirability of an honorary organization of scientific men. It reads as follows:

"Therefore we believe it is highly desirable to encourage high attainments among the future students of Cornell University and other kindred institutions by recognizing by some mark of honor those who exhibit special ability in investigating, understanding, and interpreting the facts of nature in the various branches of modern science.

"We believe that this end may be attained by an association of such graduates as understand and thoroughly appreciate these principles, in a society to be known to the outside world by some simple and appropriate badge, who shall from time to time add to their numbers from each graduating class such men as they shall deem worthy to unite with them in elevating the tone of scientific study and encouraging and honoring the scientific scholar."

A few days before the Cornell Commencement in 1886, William A. Day, a senior, and Frank Van Vleck, a graduate of Stevens Institute and the youngest member of the Cornell faculty, planned the organization of an honorary society. The next fall they, with seven others, engineering students at Cornell, formally organized the Society of the Sigma Xi, adopted a constitution, and held meetings. The first printed constitution, probably issued in 1887, contains this preamble:

"Friendship in Science. While those whose heart and soul are in their work are coping with the great problems of Nature, let them remember that the ties of friendship cannot be investigated, but only felt. Let them join heart and hand forming a brotherhood in science and engineering; thus promoting and encouraging by those strong, personal attachments of friendship, the highest and the truest advances in the scientific field. To lend aid and

encouragement to those newer brothers who likewise laboring in the same sphere are aspiring to honored positions. And in collegiate halls to award an honor which to scientific recipients shall signify 'Come up Higher.'

"Therefore with these ends and objects, the signers of this paper do hereby agree to lend their efforts to the establishment of an organization to be publicly known as the Society of the Sigma Xi."

It is signed by five graduates of Cornell, one of Stevens Institute of Technology, and three of the Rensselaer Polytechnic Institute. While it was expressly stated in the preamble that it was an organization to promote science and engineering, yet all of its members were engineers or graduates of engineering institutions, and it was believed by outsiders to be strictly an engineering society. Professor Williams heard of this organization when he tried to get some of the engineers at Cornell to join his Society of Modern Scientists. He at once came to the conclusion that there ought not to be two organizations somewhat similar in character, but that the movement would be stronger if they could be united. He thereupon gave up the Society of Modern Scientists and not only joined the Sigma Xi, but gave the whole force of his influence and personality to the latter organization. That this was very early in the history of the Society appears from the fact that at the second formal meeting Professor Williams' proposal for amalgamation was received, and at the fourth meeting he was elected a member. It is also evident that the organization of engineering students calling itself the Sigma Xi was able to see a greater and more brilliant future if it could enlist the active sympathy of all scientific professors and students in the university, and hence it gave up its original plan of limiting its membership to engineers, and cordially joined with Professor Williams in the larger conceptions which he had in mind.

I said a few moments ago that new movements do not spring into being immediately; that they are usually developments from things which have gone before. It is known that several honorary scientific societies were proposed at different times and that one was actually formed at the University of Rochester. This society opened correspondence with other scientific departments but for some reason the movement did not seem to grow. The original chapter at the University of Rochester was finally given up.

Professor Williams was the first president elected by the Cornell Chapter. He became the leader in the new movement and to him the Society owes very much of its subsequent success. The Cornell Chapter, known as the Alpha Chapter, was formally inaugurated June 15, 1887. Professor Williams delivered his inaugural address as President on the subject *The Ideal Modern Scholarship*.

I will follow the example of Professor Ward in his history and quote from this address.

"We meet today to inaugurate a new ideal of scholarship:
* * * a new ideal, not a scholarship: for we have many scholars of this modern sort to whom we may look up as our models, but to lift this modern scholarship to a place of first rank; to make it the ideal for ambitious students; to make the attainment of it an honor to be coveted beyond others; this has not been attempted before in the history of American Universities.

"The old ideal, before the mind of the literary scholar, contemplates such a training of the intellect and such an acquirement of learning as shall fit the scholar to grasp quickly, accurately, and thoroughly, knowledge bound up in the literature of the world, together with the power to communicate it readily, vividly, and forcefully to his fellows. This is the ideal which most students aspire after * * * and it is reasonable to ask why should anyone propose another? * * * We propose a new ideal because we * * * would follow the spirit of that scholarship, the letter of whose law binds and excludes us. * * *

"I cannot do better than express * * what we conceive to be the essence of the scholarship which it is the purpose of our Society to recognize. * *

"The first element in scholarship is learning. The real scholar sets before himself * * to know everything of something and something of everything. But the something, as well as the everything, changes. * * The learning which yesterday made the scholar, is ignorance today. The spirit of scholarship, then, demands * * modern learning. The old scholarship taught us to reverence the knowledge recorded in books; * * in the course of time, thus, authority came to be respected more than accuracy and imitation of the ancients received higher honor than adaptation to modern conditions. The modern scholar seeks knowledge as a means toward the vigorous expression of his manhood, a knowledge * * of those seething elements in the midst of which he lives, and of which he is one. * *

"The second element essential to the scholar is power of communication with his fellows.* * He must have acquired a thorough familiarity with his own language as a vehicle of thought, but besides this he must be able to use German and French; with these he can reach the civilized world.

"Thirdly, he must be a specialist. In his specialty he must think for himself, act for himself. Here he must rest on no one, but be himself a support for others. He must be a constant student, constantly advancing, and, making stepping-stones of his dead self, rise to higher things.

"Such are a few of the elements of that scholarship which it is the purpose of our Society to recognize, foster, and develop. * * In lighting your torches we bid you light them at the brightest living altars of learning, and not at the smouldering coals of dead issues. * *

"He who only imitates the past forgets the demands of the present, * * but he who adapts himself best to modern issues, who serves best the present age, has been, will always be the successful man."

At the fifth meeting of the Society four professors and five graduate students were elected to membership. Some of those men have since become very well known. Among them are Professor Robert H. Thurston, long considered the leading professor of Mechanical Engineering in the United States; John Henry Comstock, Professor of Entomology, Cornell University; William R. Dudley, Professor of Systematic Botany, Leland Stanford University; Charles David Marks, Professor of Civil Engineering, Leland Stanford University; Charles S. Prosser, Professor of Geology, Ohio State University; Albert W. Smith, Director of Sibley College, Cornell University; Frederick W. Simons, Professor of Geology, University of Texas; and Henry E. Sommers, Professor of Zoölogy and State Entomologist, Iowa State College. Of these eight men, seven are mentioned in *American Men of Science* and another one would have been if he had not died before that volume was issued. This shows the character of the first members of our organization and the standard which was set up.

At the sixth meeting, held on May 20, 1887, it was reported that chapters at Union College and the Rensselaer Polytechnic Institute had been organized. There seems to have been a feeling from the first that women would be admitted to the Society on the same basis

as men, but it was not until December 5, 1888, that the first women were chosen. Five were then admitted and since that time there has been no question as to the eligibility of women for admission.

The growth of the Society has been slow. Soon after the parent chapter was organized numerous institutions applied for charters and several were granted. These, however, were not in all cases organized and it has since become evident to thoughtful leaders of this new movement that progress should be made very slowly. Before introducing a chapter into any university it seems well to be sure that the strong leaders of science in the institution are in favor of the establishment of the chapter and will lend their hearty coöperation not only to its organization but to its meetings. When the first annual convention met in 1893 there were but four chapters; three in the State of New York, and one in Kansas. In 1893 the Yale Chapter was established and from that time this has been one of the largest and strongest chapters in the Society. Charters have since been granted as follows:

Minnesota	1896
Nebraska	1897
Ohio	1898
Pennsylvania, Brown, and Iowa	1900

At the close of the fifteenth year of its life the Society had eleven chapters.

Stanford was founded in	1901
California and Columbia in	1902
Chicago, Michigan, Illinois in	1903
Case and Indiana in	1904
Missouri and Colorado in	1905

At the close of the twentieth year of the organization there were twenty-one chapters on its roll.

Northwestern and Syracuse were organized in	1906
Wisconsin and Washington State	1906
Worcester	1908
Purdue	1909
Washington University	1910

When the Society was twenty-five years old it had twenty-eight active chapters.

The University of Texas has since been organized and we are installing tonight the thirtieth chapter, which is the first Alumni Chapter.

Professor Ward says in classifying these chapters: "Of the institutions represented on the chapter roll, thirteen are state universities, and one, Purdue, a state technical school; while two others, Cornell and Pennsylvania, have somewhat analogous positions in eastern states. The latter are included usually, however, in endowed institutions of university rank, in which Sigma Xi has eleven chapters. In addition there are three endowed technical schools having Sigma Xi chapters. Geographically considered the Society is represented by chapters in seven endowed universities and two endowed technical schools in the North Central regions; while two state universities and one endowed institution on the Pacific Coast are represented. There are in all ten chapters in the east, nineteen west of the Alleghenies, of which three are on the shores of the Pacific. There is one chapter in the South."

The first regular convention of the Society was held at Cornell University in May, 1893. Professor E. L. Nicholas, then President, delivered an address upon the subject Photography as an Instrument of Research. Eight biennial conventions were held from 1893 to 1906, a special convention was held in 1907, and annual conventions have been held ever since. All of these conventions, with the exception of the first, have been held in conjunction with the annual meeting of the American Association for the Advancement of Science. Again I wish to quote from our Historian's record.

"The naturalness of this affiliation was so apparent that when the Association changed its custom and replaced the midsummer meeting by one in the holiday period, Sigma Xi followed the change and since then has met regularly in Convocation Week, and at the place chosen for the meeting of the Association. These gatherings have been unusually successful in bringing together scientific workers whose technical interests are so varied that they could hardly hope to come in contact in any other way. The Sigma Xi dinner has been a regular feature of the gathering ever since it was so successfully inaugurated at St. Louis. * * * Subsequent dinners have assumed a less formal character, but, in spite of the pressure of other engagements during the limited period actually available in Convocation Week, the social part of the Sigma Xi Convention has been greeted each year with increasing interest and pleasure. The younger men welcome gladly this opportunity to meet on an informal, fraternal basis, those who have won a place in science; and the varied representation on this occasion from year to

year is the means of developing a growing interest in the achievements of the Society among many who would otherwise know little or nothing regarding its work and the results thereof."

At the second annual convention held in 1895 Professor Williams, one of the charter members and the Yale representative of the committee on extension which had been appointed at the first convention, presented the views of the committee regarding the policy of the Society in founding new chapters. These remarks and the recommendations adopted have since been incorporated as a part of the Constitution, forming Appendix 1. Professor Williams so clearly states the policy of the Society that I wish to quote his remarks in full.

"The policy of the Society in the establishing of new chapters is a matter of vital importance to its future growth and standing.

"The Society was established in 1886 by a few earnest workers in the engineering sciences, as a means of rallying and encouraging those qualities which were deemed of the first importance in their own lines of investigation. It soon became broadened and enlarged to represent the general ideals of highest scholarship in the minds and before the ambitions of every earnest student in any branch of science. It proposed to recognize and elect to its membership those men in our institutions of learning who should exhibit in a marked degree the qualifications of natural endowment and training required for successfully conducting original research in the various branches of science.

"Thus original research bears the same relation to Sigma Xi as literary scholarship does to Phi Beta Kappa; and it is believed that the cause of original research, and that part of the higher education which trains the qualities required in scientific pursuits, will be benefited by honoring with election to Sigma Xi those men who during their college course show marked proficiency in these directions.

"In founding new chapters the Society should realize its responsibility and should not grant a charter to every institution that may think itself properly equipped to teach science; but on the contrary great care is necessary in establishing chapters, in order to ensure the proper discrimination of men who are to go forth as representatives of the best results of scientific education in the United States. To attain these ends our policy should be eminently and sternly conservative, while at the same time we should be fully alert and sensitive to the needs of progress in science and education.

"We should not plant the Society in any institution which has not already developed a clear appreciation of the dignity and needs of the scientific education, and a vivid realization of the distinction between scientific and literary ability. In order to make Sigma Xi an honor society it is essential that the men of first rank in the institution be given election, and this will not be possible where Phi Beta Kappa sets the only standard of excellence, and scientific men are ranked as only second to literary scholars.

"In establishing a new chapter, therefore, we should not take into consideration any claim of advantage to accrue to the institution by such chapter, or any mere desire of individuals to become members of the Society; but in each case we should make sure that we entrust the power of distributing the honor of membership only to such persons and institutions as are capable of giving the education and training necessary to the carrying on of scientific investigation, and as have shown by their organization and equipment that they know the requisite qualifications, and are likely to confer the honor where it properly belongs.

"We should not only look for the active and pervasive spirit of research, but we should also be well assured of the hearty coöperation of the scientific faculty in the establishment of the local chapter and in maintaining its standing in harmony with the interests of the Society."

After this address the following recommendations were adopted:

- (1) That the Council, in determining the award of a charter to an institution, should give a close scrutiny to the facilities and opportunities of the institution for the advancement and encouragement of original research in the various branches of science, and to the qualifications of its scientific faculty to accomplish these ends.
- (2) That the number of distinct branches of science represented by full professors in the institution should be at least five; and these branches should include mathematics, physics, chemistry, biology (some department of it) and engineering (some department of it).
- (3) That the number of graduate and resident members of the institution required to make up the charter membership should be at least ten; and of these not less than nine should be members of the instructional body; and each person should be adjudged by the Council to be fully worthy of membership in the Society."

The adoption of this appendix and the recommendations makes it perfectly clear that this society is not a scholarship society, like

the Phi Beta Kappa, but a research society. In this respect it is unique, being the only organization of its kind in the country. Scholarship alone will not enable a person to gain admittance. He must either have done some creditable scientific work or, if an undergraduate, must have given evidence of those qualities which in the future will render him able to do research work.

The Society now has approximately 10,000 members. At the time the *Quarter Century Record and History* was published its members were found in forty-nine states in the Union, in Panama, Hawaii, the Philippines, Porto Rico, Canada, Mexico, Central America, the West Indies, various states of South America, England, Austria, France, Germany, Roumania, Russia, Spain, Sweden, Switzerland, Turkey, Asia Minor, China, India, Japan, Korea, Cape Colony, the Belgian Congo, Egypt, Natal, Orange Free State, Rhodesia, the Transvaal, and Australia.

Having traced the history of the Society from its earliest conception to the present time, I would like to say a few words in regard to its object and its methods of work.

Its Constitution has been revised from time to time, the last revision taking place at the annual convention in 1914.

Section 2, Article I, says: "The object of this Society shall be to encourage original investigation in science, pure and applied, by meeting for the discussion of scientific subjects; by the publication of such scientific matter as may be deemed desirable; by establishing fraternal relations among investigators in the scientific centers; and by granting the privilege of membership to such students as during their college course have given special promise of future achievement." I would like to discuss this section.

First. The Society is to encourage original investigations in both pure and applied science. There are no narrow limitations. Other societies devote themselves to investigations in certain branches, as physics, biology, chemistry, etc., but this society embraces work in all of the sciences and is equally interested in them all. Moreover, it does not separate investigations in pure science from those in applied science. There was a time when the research worker in pure science often claimed that he had discovered something which would never be of practical value but that claim can no longer be made. It has been proved so many times that discoveries made in pure science one year have been useful in applied science the next year that it is now unsafe to say

there is anything in the realm of knowledge which cannot be put to practical use.

Second. Original investigations are to be encouraged by meetings for the discussion of scientific subjects. Each chapter holds such meetings. Sometimes these are private, that is, confined to members of the Society. At these meetings it is customary to listen to addresses upon scientific subjects or reports upon scientific investigations from members of the chapter. While an original investigator must depend upon himself, upon his own resources, upon his own knowledge, yet he should not work alone. He should mingle with other men who are doing research work in his own line or in other lines if he is to get the most out of his life and to succeed the best in his own line of endeavor. Formerly business men were jealous of their own business and methods and would not permit anything to go out of their establishments which would give information to their rivals. Now they have learned that they can be of the utmost help to each other and that their general methods of conducting business, many of the things which they formerly regarded as secret, ought to be given to other men who are pursuing similar lines of business and that no damage can come to them through this friendly intercourse. In accordance with this belief there are associations of wholesale men in almost every city, representing all branches of wholesale business; there are associations of retail merchants representing all branches of retail trade and in all of these organizations every member is willing to acknowledge that the new method has been of advantage to him and has never hurt his business.

Many centuries ago scientific workers were exceedingly jealous of all who might be working in the same field. Soon after his invention of the astronomical telescope, Galileo noticed that there seemed to be two balls, one on each side of the planet Saturn. Not quite satisfied with the appearance he announced his discovery in the form of a logograph which consisted of the letters of a Latin sentence meaning "I have observed that the farthest planet is triple," transposed in such a way that the sentence could not be read. This held for him the priority of discovery and he did not translate his logograph until he was satisfied that his observations were correct. In more recent times it has not been uncommon for men doing research work to be somewhat loath to speak of things upon which they were working for fear that someone else might

supplant them and first publish results. I believe that this spirit has almost if not entirely disappeared. Scientific workers while they do not publish or spread broadcast statements in regard to things which are not fully settled, do not hesitate to speak with other workers in the same branch of science about the things which they are doing, and I am sure they frequently get valuable aid from those who have worked along somewhat similar lines.

Some of the meetings of the Society are open meetings to which the public is invited. Usually on such occasions a speaker of eminence from the university or from some other university delivers an address not so highly technical but what a well-read person can understand it. Many chapters have social meetings or they combine social with scientific meetings. Such meetings are frequently held at clubs or at the residences of members. For many years the Phi Beta Kappa has held a meeting at Commencement in most academic institutions and a public address has been delivered. Some of the most enjoyable addresses ever presented to college audiences have been those given under the auspices of this Society. A few years ago the chapters of the Sigma Xi in some institutions determined to hold open meetings at Commencement and to have addresses which would form a part of the commencement week program. In some instances Phi Beta Kappa and Sigma Xi have united, each furnishing speakers in alternate years. In other institutions where there are Commencement exercises in the middle of the year as well as in June, Phi Beta Kappa furnishes a speaker for one of the commencements while the Sigma Xi furnishes the speaker for the other. By all of these means original research is promoted and information in regard to scientific matters is disseminated.

Third. By publication of such scientific matter as may be deemed desirable. I do not know to what extent the Society has published the results of scientific investigation but probably very little has as yet been done. In this connection, however, I would like to call attention to the work done by the California Chapter not long since. A few years ago the bubonic plague gained a foothold in the town of Berkeley, California. As the local authorities were doing nothing to combat the spread of the disease, the California Chapter of the Sigma Xi interested itself in stirring up sentiment to compel the adoption of preventive measures. The chapter appointed a committee to investigate the conditions. Its report was presented to the Society and consisted of an exhaustive review of

the situation and recommendations for its betterment. There were no public funds and the chapter started a subscription among its membership which was the beginning of a larger public subscription amounting to many thousands of dollars. The report of the committee was printed and was very widely distributed not only locally but in various parts of the country. Here is one instance where a chapter of Sigma Xi has taken an important part in civic matters and has, through the publication of a scientific report, aroused the attention of the people and has been the means of combatting a most dangerous disease.

This same chapter also has taken an active interest in university matters and has on several occasions made recommendations which have been adopted and carried out by the authorities of the university.

Fourth. By establishing fraternal relations among investigators in the scientific centers.

The motto of our Society is "Companions in Zealous Research." The chapters of the Sigma Xi perform a function not accomplished by any other organization in our universities. The man who is working in physics may know his subject thoroughly and may be conversant with the original work which is being carried on in all departments of physics in every part of the world. While he may restrict his own activities to the branch of science in which he is actively interested, his sympathies should be broader and he should have some knowledge of what is going on in other branches of science. By bringing together the workers in all scientific subjects, by the reading of papers relating at times to one branch of science and at other times to other branches, all of the members become familiar in a general way with what is going on in the whole scientific world. Thus a liberalizing element is introduced into the lives of scientific men who might otherwise become narrow and selfish because of their lack of knowledge of what other men are accomplishing. It sometimes happens too that the work being done in one branch of science will call to mind things which may be done along other lines and may even suggest valuable methods of research.

The social features of these meetings are also worthy of consideration. Most men crave some social life. It is a rest from their ordinary labors and they find they go back to their work refreshed and stimulated by the change. The meetings of the Sigma

Xi with their social features perform this function. Not all of the conversation relates to science, and the meetings are a means of relaxation which show their beneficial results in increased scientific activity later on. The man who confines himself to his laboratory all the time will find his vitality impaired, his spirits dulled, his interest flagging. The Sigma Xi seeks to help him to escape these conditions by presenting intellectual activities foreign to his usual work and social opportunities which give needed rest and refreshment.

Fifth. By granting the privilege of membership to such students as have, during their college course, given special promise of future achievement. The Constitution states that any undergraduate in the fourth year class or of the class substantially equivalent thereto, who has given promise of marked ability in those lines of work which it is the object of this society to promote, may be elected to membership. All of the chapters do not pursue the same policy in the election of undergraduates. Some do not elect any students except those who are doing graduate work. Others elect seniors at the close of their senior year, while a few elect seniors during the early part of their senior year. The recruits for the ranks of the research workers must come as a rule from the colleges. Sometimes the courses in college do not bring out a student's ability for original thought and in other cases they help the student to develop a decided tendency toward creative work. It was the thought of those who drew up our Constitution that such ability should be recognized and rewarded while the student was in college and that if possible there should be a closer bond between the scientific professor and the student who seemed to have the power of investigation. Perhaps in the future we shall do more to encourage young men in college to look forward to lives of research.

The Constitution also provides that an alumni chapter may be established at any place other than an educational institution, wherever the objects of the Society would be furthered; and it is stated that the membership of alumni chapters shall be composed of alumni members of collegiate chapters, and such graduates of other institutions of learning at which there are no chapters of the Society, as may be elected to membership in the Society by alumni chapters. In accordance with these constitutional provisions this Washington Alumni Chapter has been organized. It seems appropriate that the first alumni chapter should be established at our national seat

of government where there are so many scientific departments doing research work, where there are research organizations under private auspices, and where so many original investigators reside. I have mentioned the constitutional statement in regard to the way in which the objects of the Society are to be promoted. There is no doubt in my mind but that these objects can be promoted in an unusual way by this chapter. You will have one of the largest, if not the largest, chapter in the organization; you can easily meet for the discussion of scientific subjects—you can promote the publication of scientific matter—you can establish fraternal relations among investigators, and in fact you can do everything which this Society is supposed to do except to grant the privilege of membership to graduate and undergraduate students. Here as nowhere else there are men representing different branches of science who can bring to your meetings a knowledge of what they themselves are doing as well as what is being done in the world at large in the sciences which they represent, and here you can have that fellowship of scientific workers which can only exist where many men of the same tastes and similar aspirations can get together for conference and fellowship. You may not always agree upon methods of work; there may be rivalry among you in regard to scientific research, but it should be that generous rivalry which may always co-exist with the deepest friendship.

This is the first Alumni Chapter to be established. All the members of our Society will look to you to see with what success you carry out the aims of our organization. If you make this a vigorous, energetic, live force for the promotion of scientific work, other alumni chapters will be established in other places.

The Society of the Sigma Xi pledges you its cordial support and coöperation in the work which you have undertaken.

FORMAL INSTALLATION OF DISTRICT OF COLUMBIA ALUMNI CHAPTER

The meeting for the installation of the first alumni chapter of the Society of the Sigma Xi took the form of a banquet held in the Ebbitt House in Washington, D. C., on the evening of February 19, at which more than forty members were present including several ladies.

After the dinner, Doctor Marcus Benjamin, president of the chapter, made the following introductory address:

"Ten years ago at the mid-summer meeting of the American Association for the Advancement of Science held in Ithaca, a dinner was given in celebration of the twenty-fifth anniversary of the founding of the Sigma Xi, and as I had then but recently been chosen to alumni membership in the chapter at Columbia, I gladly took advantage of the opportunity to learn more of the organization by which I had been so graciously honored by an election. On that occasion President Williams, President Nichols, as well as others spoke, and as I was so fortunate as to be placed next Mrs. Williams, I learned much concerning the Society. It was at that time the suggestion was made that an alumni chapter would be highly desirable in Washington where so many members of the Sigma Xi were engaged in professional scientific work. Again in 1908 the desirability of establishing a Washington alumni chapter was referred to at the convention held here during Convocation Week, but it was not possible to undertake the organization of a chapter until two years ago.

"Of the beginnings of this chapter fortunately our secretary with creditable zeal has placed on record the exact facts and I will read the following brief extract from his report which appeared in the June issue of the SIGMA XI QUARTERLY:

The first active steps toward the formation of an alumni chapter of the Society of the Sigma Xi in the District of Columbia were taken on January 2, 1914, when Marcus Benjamin (Columbia), originator of the movement, Edmund Heller (Stanford), Marcus W. Lyon, Jr. (Brown), and Paul Bartsch (Iowa), met in the latter's office in the new National Museum to consider plans for the organization of such a chapter. Seven additional local members of the Sigma Xi representing various scientific activities in Washington and widely scattered universities were asked to associate themselves with the movement. These persons were: Dr. L. O. Howard (Cor-

nell), Dr. B. H. Ransom (Nebraska), Dr. T. S. Palmer (California), Mr. F. J. Katz (Chicago), Dr. J. E. Pogue (Yale), Mr. W. R. Maxon (Syracuse), and Dr. B. W. Evermann (Indiana).

A majority of the members of this larger committee met one week later in Dr. Bartsch's office. Dr. Benjamin was chosen chairman and Dr. Lyon secretary. Committees were appointed to draw up a constitution and by-laws, and to draft a letter to invite the local members of the Society to join in forming an alumni chapter.

The following week, January 16, 1914, the organization committee met again in the same place. After an informal discussion a tentative constitution and by-laws were adopted, and the secretary was instructed to send out the following letter:

DISTRICT OF COLUMBIA CHAPTER OF THE SIGMA XI

Washington, D. C., January 23, 1914.

You are invited to attend a meeting of members of Sigma Xi in Room 43, new building of the National Museum, on Friday, January 30, at 4 P. M.

In recognition of the peculiar desirability and the need of a Chapter of Sigma Xi in this city, it is proposed to effect a permanent organization which shall petition the Council to charter an Alumni Chapter.

Please indicate on the enclosed card whether or not you will be present, and mail it to the Secretary of the Organization Committee.

Fraternally yours,

THE ORGANIZATION COMMITTEE.

In response to this letter, on Friday, January 30, 1914, fifty-four local members of the Sigma Xi met at four o'clock in the afternoon, in Room 43 of the new National Museum building to consider the formation of the new chapter. Fifty other persons expressed by card their desire to become members of the proposed chapter. The secretary had sent out 225 letters of invitation and had received 135 replies. The desirability of the formation of an alumni chapter was discussed and a letter from Professor J. McKeen Cattell, then President of the Society of the Sigma Xi, was read, expressing his pleasure at the organization of the proposed chapter.

The constitution and by-laws submitted by the organization committee were tentatively adopted. Dr. Benjamin was chosen as temporary president, and Dr. Lyon as temporary secretary-treasurer. The organization committee was instructed to continue the work of organization and to apply to the general Society for a charter.

On February 3, 1914, a formal letter of application for a charter was sent to President Cattell. This application contained the names of 109 local members of the Sigma Xi who had signified their desire for the chapter.

In a letter dated December 12, 1914, President Cattell notified Dr. Benjamin that the petition for the formation of the District of Columbia Chapter had gone the rounds of all the chapters of the Society, and that a charter would be granted to the local members of the Sigma Xi.

"If you will permit me a few more words of historical reminiscence I would say that long years ago I became a member of the American Association for the Advancement of Science and during the time since it has been my good fortune to meet many, if not most of the scientific men of our country. Thus it happens that for a score or more of years I have known our distinguished president, Dr. Charles S. Howe, of the School of Applied Science in Cleveland, Ohio. He is the last and a worthy successor of Williams, Williston, Nichols, Eddy, and Cattell.

"And now, Mr. President Howe, I have the very great honor to present to you these ladies and gentlemen for installation as the first alumni chapter of the Society of the Sigma Xi. Let me add that, as you well know, every one of them by her or his devotion to scientific studies, while an undergraduate in some college or university, earned an election to our honor fraternity. Their names are therefore already enrolled on the roster of the Sigma Xi. But Mr. President, they are more than this; for by specializing in some particular field of science they have gained increased knowledge which under the auspices of this great government, many of them are returning to the people in the shape of practical information for their betterment. They are still young, but I have no hesitancy in saying that in years to come many of them will achieve distinction in science that will bring not only honor to themselves but also add luster to the glory of the Sigma Xi."

President Howe in a few well chosen words in virtue of his high office then installed the Chapter by presenting the charter to Doctor Benjamin.

LADIES AND GENTLEMEN:

Petitioners for a Chapter of the Sigma Xi

Your petition for a chapter of the Sigma Xi to be established at Washington, D. C., has been favorably acted upon by the Council of the Society and also by the Chapters. I am, therefore, empowered by the Constitution to declare to you that your petition has been granted and that a chapter is hereby established in Washington, D. C., to be known as the District of Columbia Alumni Chapter. It gives me very great pleasure to hand to your president, Dr. Marcus C. Benjamin, the charter with the names of the petitioners.

inscribed thereon and signed and sealed by the grand officers of the Society. I heartily congratulate you upon the success which has crowned your efforts.

The presiding officer accepted the charter for the new Chapter, and after reading it to the members, expressed his appreciation to President Howe for the honor that had been done to the Chapter, transferring the charter to the custody of the Secretary.

President Howe then delivered an address which appears elsewhere in this issue.

Doctor Benjamin on behalf of the Chapter thanked President Howe for the address and invited Doctor Howard to officially convey the appreciation of the members present for the eloquent and instructive address.

Meanwhile Professor Thomas H. Norton, who after seventeen years of professorial labors at the University of Cincinnati had relinquished his chair to investigate the chemical industries of Europe, was introduced and entertained the Chapter with a most fascinating address as follows:

"Mr. President and members of the District of Columbia Alumni Chapter of the Sigma Xi:

"I esteem it a distinguished honor to be the guest of your chapter at its first annual banquet. I esteem it no less an honor to pass an evening by the side of your President, an old and cherished friend, one who has contributed in so notable a degree to the advancement of organized effort throughout the nation to maintain our scientific, historic, and patriotic ideals. I congratulate him on being the prime mover to call into existence the first alumni chapter of your Society, and I congratulate you all upon having so successfully testified to the solidarity of the scientific spirit in the capitol of our country by creating a new bond of union, a new center of stimulating companionship.

"Without being duly and officially accredited for the purpose, I feel, however, that I am fully empowered by your sister organization, the Phi Beta Kappa Association in the District of Columbia, to extend to your chapter hearty congratulations, as you take your place among the vital energizing factors of this city's intellectual life. Side by side Phi Beta Kappa and Sigma Xi stand in friendly unison representing the ideals of American scholarship. The older sister, dating from the opening year of our nation's existence, emphasizes

the acquisition of the world's treasures of thought and expression, the skillful, forceful use of these tools in fashioning new concepts of law, religion, politics, economics—all that is embraced in that grand old Greek word *Φιλοσοφία*. The younger sister grants her laurel wreath to those who wrest from nature her secrets, who render her innumerable resources and the immutable laws of the universe tributary to the progress of mankind towards higher, freer, happier standards of existence, physical, intellectual, and spiritual.

"To some extent one is typified by contemplation, the other by action. The one opens its portals traditionally to those who have mastered human love; the open sesame to the other's abode is accomplishment. And so the two organizations will move along neighboring paths here diverging, there approaching, each contributing to that magnificent sum total of American scholarship, so rapidly becoming the dominant factor in this twentieth century.

* * * *

"As my gaze passes over the circle of keen, alert faces grouped about this festal board, I think instinctively of your counterparts across the sea, the thousands of those who on American soil, in American universities would have received the symbol of your Society. Scores of them are known to me personally, joined by bands of friendship dating back more decades than I like to confess. Today, almost without exception, their attainments and their talents are devoted to perfecting means for the destruction of their fellow-men. Their numbers are swiftly dwindling. Each hour almost witnesses stars against the names of those who might be the Huxleys, the Pasteurs, the Bunsens, and the Helmholtzes of the century upon which we have barely entered.

"You, on the contrary, are devoting every power and every effort to increasing the comfort and happiness of your fellow citizens. The initial years of Phi Beta Kappa were synchronous with the birth throes of our nation, with years of struggle, sacrifice, and bloodshed. May the early years of Sigma Xi, and especially the youth of this chapter, be free from scenes of conflict other than those resultant from a struggle with the obstacles and difficulties offered by nature to the mastery of our globe. When your chapter celebrates its silver and its golden anniversaries, may you look back upon years of peace in our nation, free from the clang of trumpet

FORMULATION OF CONDITIONS FOR THE SELECTION OF MEMBERS

G. A. MILLER

As stated on page 23 of the March number of the QUARTERLY, the Illinois Chapter of the Society of the Sigma Xi recently adopted certain conditions for the election of new members, for the purpose of stating as clearly and definitely as possible the present interpretation on the part of this Chapter of the general conditions for membership prescribed by the Constitution of the Society. In recent years the Board of Electors of the Illinois Chapter has experienced considerable difficulty resulting from the large number of nominations made by the various departments of the University in accord with their own interpretations of the general conditions set down in the constitution as governing the election of new members.

The rapid increase in the number of graduate students and in the facilities for investigation seemed to make it desirable to raise gradually the standards for election of members in order that the Chapter might have the best possible local influence under these changed conditions. On the other hand, the information submitted to the Board of Electors was in many cases insufficient to select wisely a comparatively small number of members from the large number of nominees. Errors made in this respect naturally tended to diminish the interest in the Chapter on the part of some of those whose cordial coöperation was most desirable.

To obviate these difficulties as far as possible the Board of Electors formulated conditions to which reference has been made. All members of the Chapter received copies of these conditions at the time nominations were due and when the Board of Electors met to consider the election of members, the number of nominees placed before it was less than half as large as it had been in previous years. A very gratifying feature of the situation was the fact that the nominees seemed to have been selected with such great care that only a small number of them failed to be elected. Naturally there was a much better general feeling after the election on the part of those who had made the nominations than had sometimes existed in late years.

One reason the master's and doctor's theses were not regarded as sufficient to fulfill the requirements of publication on the part of those who are to be elected on the conditions prescribed for new

faculty members, is that the primary object of the Society of the Sigma Xi seems to be to encourage those actively engaged in research. It was thought that election to this body should imply the promise of greater accomplishments on the part of those who have already shown noteworthy achievements in original investigation as well as on the part of those elected as students. "Companions in Zealous Research" seems to imply more than accomplishments.

Scientific zeal can evidently not be gauged by the quantity of published material, but the zealous scientific investigator who is blessed with ability may be expected to make occasional discoveries which are very useful to others working along similar lines. The publication of such discoveries is clearly a service to science and hence should be encouraged. The insistence on independent publication on the part of those who may naturally be expected to stand out most clearly as the embodiment of the ideals of the Society seems therefore desirable.

On actual trial the given conditions prescribed by the Illinois Chapter for nominees who do not belong to the student body did not exhibit any objectionable features. On the other hand, the conditions relating to graduate students were not found entirely satisfactory in view of the fact that several of these students, who appeared to be otherwise highly qualified for membership, did not have their manuscript in suitable form to be placed before the Board of Electors at the time nominations were due. Whether this feature of the conditions will be modified by the Chapter, or whether the objection will be obviated by holding the future elections at a later date, will probably be decided before the next annual election.

One reason why it seemed desirable that the graduate student should have actually completed at least one good manuscript before he should be considered for election to the Society is that the merit of a contribution can generally be more completely determined after it has been put into good form. Moreover, the student's success as a scientist depends largely upon his ability to present his results clearly and to exhibit their bearing on other work. The growing tendency towards direct collaboration in science naturally increases the relative importance of this ability.

Notwithstanding the danger involved in the election of undergraduates to membership in the Society, the Illinois Chapter has

deemed it desirable to continue the practice of electing such members. It has, however, endeavored to make the conditions governing these elections sufficiently high to guard against a large per cent of bad elections. In fact, if the given conditions relating to this class of members can be strictly enforced it is likely that the per cent of misplaced confidence in this class will prove to be lower than that in either of the other two classes.

An obvious danger of stringent eligibility conditions is that they may prevent nominations on the part of the most conscientious members and thus tend to bring before the Board of Electors only a partial list of those who are most worthy of election. A representative Board of Electors will generally soon learn that the art of nominating favorably is more readily acquired by some members than by others. If the prescribed conditions are such as to bring before the Board all desirable names together with some undesirable ones the elimination is usually more nearly correct than some of the members of the Chapter would be willing to admit.

There are, however, great dangers in drastic eliminations of this type, as was noted above. The wisest course seems to be to have eligibility conditions sufficiently lenient to secure all the desirable nominees on the part of those who are the most careful and scrupulous, but not so lenient as to make very extensive eliminations necessary on the part of the Board of Electors. That some such eliminations will always be necessary seems natural if the Society is to perform its full service in the encouragement of research.

The Board of Electors of the Illinois Chapter has assumed that the interests of the Society demand that a careful study of each case be made irrespective of university degrees or official positions. For instance, graduate students who have been recommended for the Ph.D. degree in some scientific subject are not regarded as fulfilling thereby the requirements for election, and such students have not always been elected. Nor does the appointment to a full professorship in a scientific department imply that the appointee fulfills the eligibility conditions for election as a member of the faculty. In fact, it is likely that some of the best service that can be rendered by the Society for the encouragement of original investigation will result from a careful and conscientious treatment of such cases.

A great danger of very definite formal eligibility conditions for new members is that formalities are usually more readily complied

with by the weak students than by the stronger ones. The advancement of scientific knowledge is largely due to non-conformists. In particular, too much stress is apt to be placed on mere publications or the mere completion of a particular undertaking. As a strong scientific factor in our American universities the Society of the Sigma Xi can do much good by standing for the highest ideals, which are embodied in men rather than in phrases. It is the function of the Board of Electors to find these men with the aid of the local members even if the process develops some friction.

While it seems impossible to put into words the complete eligibility conditions for new members, and while strenuous efforts along this line would be more likely to hinder than to help scientific work of high order, yet the members of a chapter are entitled to know certain minimum conditions which govern the actions of its Board of Electors. The said conditions formulated by the Board of Electors of the Illinois Chapter aimed merely to convey to the members of the Chapter such minimum conditions, and they were not intended to furnish the true conditions of membership.

For the enforcement of these true conditions of membership, it is necessary to depend primarily upon men who have been in close contact with the nominees and who have observed at close range the spirit, ability, and zeal which tend to characterize him as a scientist. These characteristics can clearly be fully appreciated only by those who are themselves dominated by high scientific ideals, and hence a Board of Electors must naturally be largely governed by the names of the nominators. It is perhaps not too much to say that its study of the nominee should begin with a study of the nominators.

A very important element in the said formulated conditions for eligibility for membership is the fact that the nominators are expected to express their opinions in regard to the value and originality of publications or manuscripts submitted. The Society of the Sigma Xi can render no more needed service to the advancement of science than the encouragement of a careful distinction between publications, and this distinction can be made wisely only by those who are specialists on the matters in question. It should be especially noted that both of the nominators are expected to express their opinions on this point. These opinions in each case should be first hand in order to secure the desired information.

The exercise of great care in the election of members to our Society is the more important in view of the fact that this election is usually the first scientific honor conferred upon the student by a national organization. General confidence in the integrity and carefulness on the part of those in position to bestow great scientific honors is of the greatest significance if these honors are to wield a strong influence for good. It is evidently important that this confidence should not be shattered at the start through the lack of due precaution or of the strictest impartiality.

The keystone of good elections, especially in large institutions, is good nominations. A very important precautionary method to secure such nominations is the special departmental meeting for the consideration of possible nominees. The arrangement of all the nominees of the department in the order of merit is often very helpful to the Board of Electors. The use of such methods, especially on the part of the larger departments, is clearly much more effective than the direct considerations by the Board of Electors, based upon the statements made by the nominators who may be more or less skillful in the use of superlatives.

The service to science which the Society of the Sigma Xi aims to perform through the election to membership is clearly one beset with very great difficulties, and efforts along this line are apt to prove more harmful than helpful unless the proper care is exercised. In view of these facts a discussion of the means employed by the various Chapters to secure the best possible results along this line should be highly valuable. The present article aims to be a slight contribution in this direction.

CHAPTER REPORTS

THE CORNELL CHAPTER

During the academic year 1915-16, ten meetings were held, at nine of which a scientific program was presented. Two meetings of especial interest were devoted to departmental demonstrations of research work under investigation by members in the department. The general policy of the chapter has been to invite the public to the lectures and demonstrations, and the large attendance in most cases has been good evidence of the interest shown in the work of the Society. The usual social hour for members and their wives was held immediately following many of the lectures.

The list of meetings with speakers and dates is as follows:
The Bearing of the Modern Study of Heredity on our Ideas of Evolution, by Dr. T. H. Morgan of Columbia University, October 18.

Plant Life in the Cayuga Lake Basin, by Professor K. M. Wiegand, November 23.

The Habits of Spiders, by Professor J. H. Comstock, December 16.

Some Present-day Ideas Regarding Soil Fertility, by Professor T. L. Lyon; followed by an inspection of the new soil technology laboratories, January 13.

Industrial Electric Heating, by Professor C. F. Hirshfeld, Chief of the Research Department of the Detroit Edison Co., February 17.

Experimental Demonstration of Research in Progress, by members of the Department of Psychology, and inspection of the psychological laboratories, March 23.

A Biological Expedition to Great Slave Lake, by Mr. Francis Harper of the N. Y. State Conservation Commission; followed by business meeting and election of new members, May 8.

Annual Initiation Exercises and Dinner, May 15.

A Successful Campaign against the New Jersey Mosquito, illustrated with moving pictures, by Professor T. J. Headlee, State Entomologist of New Jersey, May 19.

Experimental Demonstrations and Exhibits by members of the Medical College, May 25.

At the annual meeting held for the purpose, sixty-seven new members were elected by the Alpha Chapter. This number includes

three members from the faculty, forty-one graduates, twenty-two undergraduates, and one alumnus, as follows*:

MEMBERS OF THE FACULTY OF CORNELL UNIVERSITY—3

Alexander Gray, B.S. in C.E., Edinburgh, 1903; Whit. Sch., B.S. in E.E., McGill, 1905. Professor in Charge of Electrical Engineering. P. The Heating of Induction Motors; Textbook on Electrical Machine Design; Textbook on Principles and Practice of Electrical Engineering. C. Brush Friction.

Frederick Fritz Koenig, D.V.M., Cornell, 1909. Assistant Professor of Veterinary Medicine. P. "Case Records" from the Ambulatory Clinic. I. Collection and Tabulation of Clinical Case Records.

Andrew Theodore Rasmussen, A.B., Brigham Young University, 1909. Instructor in Physiology. P. The Oxygen and Carbon Dioxide Content of the Blood during Hibernation in the Woodchuck. C. Theories of Hibernation; The Absence of Chromatolytic Changes in the Central Nervous System of the Woodchuck during Hibernation (conjointly); The Effect of Thyroparathyroidectomy on the Blood Coagulation in the Dog (conjointly); The Effect of Temperature on the Blood Coagulation Time in the Dog (conjointly). I. (Three other titles relating to the Woodchuck during Hibernation.)

GRADUATE STUDENTS—41

Charles Harold Berry, M.E., Cornell, 1912. Instructor in Steam Power Engineering. P. The Theory of Humidity; Air in Compression and Expansion; Discussion on the High-Pressure Unaflo Engine. I. An Investigation of the Operating Characteristics of the Le Vanc Vacuum Pump (Thesis).

Homer Guy Bishop, B.S., Ohio University, 1911, M.S., 1912. Assistant in Psychology. C. Improvements in Demonstrational Apparatus. I. On Images of Memory and Imagination.

* Following each name is a list of research titles, in some cases only partially complete, indicating the work upon which nomination is primarily made, with symbols prefixed as follows.

P. Published articles or books.

C. Completed research not published.

I. Incomplete research in progress.

- Sherman Chauncey Bishop, B.S., Cornell, 1915. Assistant in Entomology. P. A Biological Reconnaissance of the Okefinokee Swamp in Georgia.—The Snakes (joint author). I. Supplementary Report on the Reptiles; Spiders of the Okefinokee Swamp.
- Chester Claremont Camp, B.A., Grinnell College, 1914; A.M., Cornell, 1915. Fellow in Mathematics. I. Linear Differential Equations (Thesis).
- Wallace Larkin Chandler, B.S., California, 1914, M.S., 1915. Instructor in Parasitology. P. (Papers on Mosquito and Fly Control) (collaborator). C. The Morphology and Life History of Certain Ixodoidæ. I. The Morphology of Ornithodoros.
- Charles Chupp, A.B., Wabash College, 1913. Instructor in Plant Pathology. I. A Study of Plasmodiophora Brassicæ (Thesis).
- Charles Dudley Corwin, M.E., Cornell, 1908. Instructor in Machine Design. Surface Combustion (joint author). I. Surface Combustion as Applied to Steel Making.
- Joseph Vital De Porte, A.B., Oklahoma, 1912; A.M., Princeton, 1914. Assistant in Mathematics. I. Irrational Involutions on Algebraic Curves (Thesis).
- Edgar Hutton Dix, Jr., M.E., Cornell, 1914. Instructor in Experimental Engineering. C. Investigation of Fatigue-Resisting Properties of 90% Copper—10% Aluminum Alloys. I. (Continuation of the above, and Investigation of Tensile Properties); Heat Treatment of various Species of Copper-Zinc Alloys, and Effects on Structure (metallographic) and Tensile Properties.
- Vining Campbell Dunlap, A.B., Bates College, 1914. I. Morphology and Development of several Species of Pleurotus; The Development of Lepiota granosa.
- Silas Shihadeh George, B.A., Beirut College, 1912; M.A., Nebraska, 1914. Susan Linn Sage Fellow in Psychology. C. The Gesture of Affirmation among the Arabs. I. The Scale of Sensory Judgments in Metric Methods.
- Samuel Alexander Graham, B.S. in F., Minnesota, 1914. Assistant in Entomology. I. The Biology and Control of the White Pine Weevil.

- Guy Everett Grantham, A.B., Indiana, 1909, A.M., 1913. Fellow in Physics. P. The Time Factor in Selenium Resistance. I. Crystal Structure by means of X-Rays; (Some Original Problems in Alternating-Current Work) (conjointly).
- Ludlow Griscom, B.A., Columbia, 1912; A.M., Cornell, 1915. Assistant in Zoölogy and Entomology. P. Numerous Ornithological Notes. C. The Field Identification of Water Fowl.
- Charles Harvey Hadley, Jr., B.S., N. H. College of A. & M., 1912. Investigator in Entomology. P. Contact Sprays for Brown-Tail Caterpillars; The Rhododendron Lace-Bug (joint author) and (several others). C. The Lesser Migratory Locust in New York.
- Miles Bertine Haman, B.S., Cornell, 1915. Assistant in Forestry. I. The Distribution of North American Conifers, and Its Relation to certain Ecological Factors (Thesis). The Effect of Commercial Fertilizers in Forest Nursery Practice.
- Royal Joyslin Haskell, B.S., Dartmouth College, 1912. Instructor in Plant Pathology. C. A Fusarium Stem-Wilt and Tuber-Rot Disease of Potatoes. I. A Wilt Disease of the Potato (Thesis).
- Leon Augustus Hausman, A.B., Cornell, 1914. Instructor in Meteorology. C. Contributions to the Life-history of *Amœba proteus*; The Ecology of the Protozoa of the Cayuga Lake Basin.
- Walter Norton Hess, A.B., Oberlin, 1913. Assistant in Insect Morphology. I. The Chordotonal Organs of Certain Cerambycid Larvæ; Life History of *Ragium Linaetum*.
- Algernon Charles Irwin, B.S., Ohio University, 1903. C. The Maximum Carrying Capacity of Iron and Steel Railroad Bridges (Thesis).
- Harry E. Knowlton, B.S., Michigan Agricultural College, 1912. Assistant in Botany. I. Physiological Study of the Viability of Pollen.
- Laurence Howland MacDaniels, A.B., Oberlin, 1912. Instructor in Botany. I. The Histology of the Phloëm in the Ontogeny of Woody Angiosperms.
- Walter Hoge MacIntire, B.S., North Carolina Agricultural and Mechanical College, 1905; M.S., Penn State, 1909. P. Field Equipment for Investigations of Soil Leachings; A New Method

- for the Determination of Carbonates in Soils; several other titles. I. Carbonation of Burnt Lime in Soils.
- Edward Lawrence Mack, B.S., Union, 1912. C. Electrolytic Production of Perchlorates.
- Percy George McVetty, M.E., Cornell, 1913. Instructor in Research Engineering. I. Viscosity of Lubricants. C. Several Commercial Reports.
- Samuel Arthur Mahood, B.S., Nebraska, 1910, M.A., 1911. Instructor in Chemistry. I. Tetraiodophenolphthalein and Tetraiodophenoltetrachlorophthalein and Some of their Derivatives.
- Lua Alice Minns, B.S., Cornell, 1914. Instructor in Floriculture. I. A Study of Chinese Primulas.
- Edward Gardner Misner, B.S., Cornell, 1913. Instructor in Farm Management. I. A study of the Dairy Industry of Broome County, with a detailed Analysis of the Cost of Production.
- Philip Alexander Munz, A.B., Denver, 1913, A.M., 1914. I. Venation of Zygoptera-Odonata.
- Ruby Rivers Murray, A.B., Mt. Holyoke, 1912, A.M., 1914. Fellow in Chemistry. C. Diphenyltetrachlorophthalide and Some of its Derivatives. I. A new Class of Phthaleins—Mixed Phthaleins, Made by Condensing Paraoxybenzoylorthobenzoic Acid with Phenols.
- Waro Nakahara, B.S., Tokyo Agricultural College, 1915. Graduate Assistant in Entomology. P. A Revision of the Mantispidae of Japan; On the Osmylinae of Japan, etc., etc. I. The Venation of the Neuroptera; The Silk Glands of Neuronina.
- Howard A. Pidgeon, B.Sc., Ohio University, 1911, M.Sc., 1912. Instructor in Physics. P. Irregular Wave Forms—Form Factor, and its Significance (joint author). I. Magnetic Properties of Cobalt.
- Charles Roy Reid, B.S. in E.E., University of Oregon, 1906, E.E. 1912. Sibley Fellow in Electrical Engineering. P. A Discussion of the Electrification of Steam Railways; Some Special Transformer Connections; The Use of Hyperbolic Functions in the Calculation of a Long-distance Transmission Line. I. Determination of the Most Desirable Source of Electric Power for a Small Town (Thesis).

- Gilbert Joseph Rich, A.B., Cornell, 1915, A.M., 1915. Susan Linn Sage Scholar in Psychology. (Fellow for 1916-17.) P. On the Variation with Temperature of the Pitch of Whistles and Variators; A Preliminary Study of Tonal Volume; A Preliminary Study of Vowel Qualities (joint author). I. An Exact Study of Vowel Qualities.
- Rudolph Wilhelm Ruprecht, B.S., Rhode Island State College, 1911; M.S., Massachusetts Agricultural College, 1914. P. Toxic Effect of Iron and Aluminum Salts on Clover Seedlings; The Effect of Sulfate of Ammonia on the Soil. I. Studies on Iron, Aluminum, and Manganese Compounds in Soils.
- William Hayes Sawyer, Jr., A.B., Bates College, 1913. I. The Morphology and Development of several Species of Pholiota.
- Joseph Prestwich Scott, B.S., Lausanne, Switzerland, 1910, D.V.M., Ohio State University, 1914. P. Low Level of Nitrogen Output in the Female (joint author); Nitrogen Metabolism in a case of Portal Vein Obstruction (joint author). I. Urinary Indican.
- Francis Webber Sherwood, B.S., North Carolina Agricultural and Mechanical College, 1909, M.S., 1911. Assistant in Chemistry. I. Phenosulphonphthalein and Some of its Derivatives.
- Harvey Elmer Stork, A.B., Indiana State Normal, 1914; A.M., Indiana State College, 1915. Assistant in Botany. I. Apogamy in *Taraxacum densleonis*; Cytology of Imperfect Pollen in *Oenothera*; Studies on the Development of *Cantharellus*.
- Cecil Calvert Thomas, A.B., Wabash, 1912, M.A., 1913. Instructor in Botany. I. The Relation of some Species of Blue-green Algae in pure Culture to Elementary Nitrogen.
- James Leroy Weimer, A.B., Wabash College, 1912. Instructor in Plant Pathology. C. Life Histories of three Cedar Rust Fungi and the Diseases they Produce (Thesis). I. Histological Study of the Galls Produced by *Gymnosporangium Macropus*.

MEMBERS OF THE CLASS OF 1916—22

- William Biederman, B.Ch., Cornell, February, 1916. I. A Study of the Hydrogen Compounds of Boron; Sensitiveness of the Spectroscopic Tests for Various Elements and the Masking of Spectral Lines and Bands.

- Louis Jacquelin Bradford, B.S., Swarthmore College, 1911. Instructor in Machine Design. P. Surface Combustion (joint author). I. Surface Combustion as Applied to Steel Making.
- Frederick Christian Brandes. I. A Study of the Physical Properties of the Gypsum Products (conjontly).
- Marion Edwin Dennington.
- Henry Conrad Diercks, B.Ch., Cornell, February, 1916. I. Pressure, Temperature, Concentration Relations in the System Potassium Sulphocyanate, Sulphur Dioxide.
- Frederick Baxter Downing, Jr., Assistant in Chemistry. I. Addition Agents in Electrolysis.
- Henry Alden Foster, B.S., Arizona, 1913. I. Investigation of Different Methods to Determine the Loading and Stresses in Members of "Pennsylvania" Bridge Trusses (Thesis).
- Harlowe Templar Hardinge. I. Development of a Temperature-Change Alarm System.
- Leo Augustine Keane. I. A Study of Plaster of Paris; Limonite and the Color of Yellow Bricks.
- Frank Kovacs, Assistant in Chemistry. I. Ammonates of Copper Selenate.
- Joseph Bruce Latshaw, B.S.A., University of Missouri, 1909. Student Assistant in Veterinary. I. The Study of the Agglutination Test in the Diagnosis of Contagious Abortion.
- Julia Moesel, Assistant in Zoölogy. C. Amphibia of Okefinokee Swamp, Georgia (collaborator). I. Vertebrates of Lake of Bays Region, Ontario.
- George Merritt Robison.
- Theodore Chittenden Rogers. I. Flow of Water through Square Culverts, etc.
- Karl Patterson Schmidt, Assistant in Entomology. C. Herpetology of North Carolina. I. Herpetology of Louisiana; Oligocene Invertebrates of the New World.
- Leon John Sivian, A.B., Cornell, February, 1916. Assistant in Physics. I. Specific Heats at High Temperature.
- Theodore Levi Smith. I. Flow of Water through Square Culverts, etc.

- *Thomas Reese Spence, B.S. in C.E., Agricultural and Mechanical College of Texas, 1913. I. Relation between the Tensile and the Compressive Properties of Cement and Mortars; Study of the Effect of Consistency upon the Strength of Portland Cement.
- Earl Iru Sponable, Assistant in Chemistry. I. Extraction of Thallium from Spelter Distillates; Study of Thallium Cobaltic Nitrite; Examination of Flue Dust from Pyrites.
- Fred Waldorf Stewart. (Schuyler Fellow in Histology and Embryology for 1916-17.) I. The Development of Thymus IV in the Cat; Experimental Study of the Effect of Cutting the Peripheral Nerve on the Taste Buds in the Rabbit.
- Charles Gasner Stupp, Assistant in Chemistry. I. Preparation of New Salts of Benzene Sulphonic Acid.
- Federico Terrazas.

ALUMNUS—I

James Kemp Plummer, B.S., North Carolina Agricultural and Mechanical College, 1907, M.S., 1909; A.M., Cornell, 1911, Ph.D., 1915. P. Petrography of some North Carolina Soils and its Relation to their Fertilizer Requirements. C. The Effect of Oxygen and Carbon Dioxide on Nitrification and Ammonification in Soils.

J. G. PERTSCH, JR., *Recording Secretary*.

* Nominated as a senior to graduate in February, 1917.

THE MISSOURI CHAPTER

Four public lectures were delivered under the auspices of the Missouri Chapter. Two, the annual fall series, were given by Professor Robert A. Millikan, of the University of Chicago, on The Subatomic World, and The Nature of Radiant Energy. On February 25, Dr. W. W. Duke spoke upon The Glands of Internal Secretion and their Relation to Growth and Mentality. On May 8, Professor C. F. Marbut, in charge of the U. S. Soil Survey, discussed The Development of Ideas Concerning the Field Relationship of Soils.

A new feature of scientific meetings within the Chapter was initiated this year, and has proved productive of increased interest and activity. Three such meetings were held, and the programs were as follows:

On December 13, 1915

- Max F. Meyer: Demonstration of a very rare case of Color Blindness and Discussion of its Evolutionary Significance.
C. Robert Moulton: Units of Reference for Basic Metabolism and their Interrelations.
W. H. Pyle: An Experimental Study of the Mind of the Negro.

On February 7, 1916

- G. S. Dodds: The Altitudinal Distribution of Crustacea in the Mountains of Colorado.
E. B. Branson: Origin of Thick Salt and Gypsum Deposits.
W. A. Tarr: Origin of Chert in the Burlington Lime Stone.

On April 3, 1916

- O. R. Johnson: Factors Which Measure the Efficiency of Farming Systems.
W. H. Lawrence: The Pollination of the Date Palm.
George Lefevre: Genetic Studies in Poultry.

The following new members were initiated in May, 1916:

- Baskett, Edgar Drane, A.B., Missouri, 1915, A.M., 1916. Physiology. Thesis: Some Factors upon the Innervation of the Heart, with Special Reference to the Accelerator Mechanism of the Heart of the Turtle, *Emydoidea blandingi*.
Blom, Edward Charles, A.B., Cape Girardeau Normal, 1911, B.S. in Ed., Missouri, 1915, A.M., 1916. Physics. Thesis: Charcoal Absorption in Vacua.
Branson, De Hellik, B.S., Kansas Agricultural, 1913; A.M., Missouri, 1916. Fellow in Animal Husbandry. Thesis: The Effect of Various Planes of Nutrition on the Cost of Maintenance, Development, and Reproduction of Beef Cows.
Corriveau, Paul Edward, B.S., N. H. Agricultural College, 1915; A.M., Missouri, 1916. Horticulture. Thesis: An Experimental Study of the Effect of Rest Period Breaking Agencies upon Root Growth of Hardwood Cuttings.
Durant, Adrian Jackson, B.S.A., 1913, A.M., Missouri, 1915. Research Assistant, Experiment Station. Veterinary. Thesis: Complement Fixation in Hog Cholera; in progress, Complement Fixation in Contagious Abortion. Abstracts in Reports of the Missouri Experiment Station, 1915, and U. S. Experiment Station Record, 1915.

- Hardy, John Ira, B.S., R. I. State College, 1910; M.S., University of Tennessee, 1914; Ph.D., Missouri, 1917; Assistant Chemist, University of Tennessee, 1911-1915; Fellow in Agricultural Chemistry, 1916-1917. Thesis: The Effect of an Excessive Ratio of Lime to Magnesium upon Plant Growth. Publications: Associate author of several bulletins, Tennessee Experiment Station. In progress: Cumarin in Sweet Clover; Proteins and Protein Derivatives in Nutrition.
- Heinz, Albert, A.B., B.S. in Education, Missouri, 1910, A.M., 1916; Professor of Mathematics, Tsing Hua College, Peking, China. Mathematics. Thesis: First Year University Mathematics Courses.
- Hughes, Jewell Constance, A.B., University of Arkansas, 1915; A.M., Missouri, 1916. Scholar in Mathematics. Thesis: Transcendentalism of Curves and of Numbers.
- Jones, Charles Arthur, B.S. in Agriculture, 1915, University of Wyoming; A.M., Missouri, 1916. Agricultural Research Scholar in Animal Husbandry. Thesis: The Effect of Early Pregnancy and Lactation on Growth in Young Breeding Animals.
- Longwell, Chester Roy, A.B., Missouri, 1915, A.M., 1916. Geology. Thesis: The Geology and Mineralogy of the Wellington Mine, Breckenridge, Colo. In progress: A Fauna of a Part of the Middle Ordovician of Missouri.
- Loomis, Albert G., A.B., Missouri, 1914, A.M., 1915. Scholar in Chemistry, 1914-15; Fellow, 1915-16. Thesis: The Dielectric Constants of some Liquid Compounds of Vanadium; Abs. in Jour. Phys. Chem., vol. 9, 1915. Ready for press: Extraction of Radium from Carnotite Ores (with Herman Schlundt).
- Prewitt, Proviso V., A.B., Missouri, 1915, A.M., 1916. Physiology. Thesis: The Relation of the Lipase and Fat to Carbohydrate and Amylase Content of the Liver.
- Sive, Benjamin Elliott, B.C.E., University of Cincinnati, 1914; A.M., Missouri, 1916. Assistant in Chemistry, University of Cincinnati. Agricultural Chemistry. Undergraduate thesis: A New Indicator of the Azo Type. Thesis for Master's degree: The Mineral Composition of the Bovine as Influenced by Age and Condition of the Animal.

Swett, Walter Whittier, B.S., New Hampshire State; A.M., Missouri, 1916. Dairy Husbandry. Thesis: Factors Influencing the Growth of Dairy Animals.

Weatherwax, James Lloyd, A.B., Oberlin, 1912; A.M., Missouri, 1916. Physics. Thesis: An Investigation of the Stretch Moduli.

Winkler, Charles Herman, B.S. 1904, A.M. 1914, University of Texas; Ph.D., Missouri, 1916. Horticulture. A Guide to Mushroom Culture (with B. M. Duggar); (with W. S. Taylor) Nature Study and Agriculture for the Rural Schools of Texas. University of Texas, Bulletin 361, 1915. The Botany of Texas; Bulletin 18, University of Texas, 1915. Thesis for the Doctor's Degree: The Relation between Vegetative and Reproductive Activity in Plants.

Officers were elected for 1916-17. The roll of active members for the year numbered 77.

D. H. DOLLEY, *Secretary*.

NOTES

The Indiana Chapter has published a yearbook for 1916 which lists officers and members of the Chapter and the full program for the calendar year. One meeting is held in each month during the academic year and usually at each meeting two papers are read by resident members. The January meeting, however, is devoted to Convocation Week Reports by fifteen members and there are two meetings at which visiting scientists have delivered addresses. One unusual feature of the pamphlet is a full list of non-resident and former members of the Chapter.

District of Columbia Chapter.—In the list of the Charter Members published in the SIGMA XI QUARTERLY, Volume 3, No. 2, June, 1915, the name of Alden Archibald Potter, A.B. Minnesota, 1909, Assistant Pathologist, Bureau of Plant Industry, U. S. Department of Agriculture, was omitted by a clerical error.

M. W. LYON, JR., *Secretary*.

OPEN FORUM

To the Members of Sigma Xi:

For some time the writer has been considering whether or not the time is ripe to suggest a slight revision of the Constitution of Sigma Xi as regards the class of people which the Society should elect to membership. There was a time even as late as the founding of our society when very few colleges or universities gave graduate work or, if such was offered, had more than one or two students carrying advanced work of an investigational nature. Now the situation has changed; many institutions have numerous graduate students and many others have several each year. In view of this advance in our institutions is it not time to restrict membership in Sigma Xi to those who have shown by actual demonstration their ability to carry on investigational work? In other words, should we not now, as a national organization, prohibit the election of any undergraduates, even in their senior year? We have all seen many students elected in the senior year who have gone immediately out into the business world, the ministry, or law, thus cutting themselves off from the possibility of doing any further investigational work in scientific lines. Too many times the election of members has been "a reward for past victories," which W. C. Hood in his initiation address to the Michigan Chapter (May, 1914) aptly said should not be so. Since it seems agreed that Sigma Xi is primarily to encourage investigation and not to reward good scholarship; and especially since we have at least one national honorary fraternity, Phi Kappa Phi, and several more limited societies whose primary object is to reward high scholarship along scientific lines, it would seem advisable to raise the standard of the Sigma Xi by eliminating undergraduate membership from now on. We should not be anxious for numbers but quality and there are enough graduate students in this country from which to choose members who show promise of becoming scientific investigators. Moreover, by thus restricting the membership the next question of the value of grades in determining scholarship will be solved so far as Sigma Xi is concerned. Several chapters already have restricted, or are considering the advisability of restricting membership as outlined above. Why then should not the national organization take a strong stand to make the standards of membership as uniform as possible?

Your brother in Sigma Xi,

ERNEST SHAW REYNOLDS.

CHAPTER OFFICERS

LIST FURNISHED BY THE CORRESPONDING SECRETARIES OF THE CHAPTERS

CHAPTER	PRESIDENT	VICE-PRESIDENT	REC. SECRETARY	COO. SECRETARY	TREASURER
Cornell.....	J. G. Needham...	F. K. Richtmyer..	J. G. Perisch, Jr....	James McMahon..	O. C. Johannsen
Rensselaer.....	E. N. D. Schulte..	F. R. I. Sweeney..	C. H. Andros.....	E. F. Chittman...	E. F. Chittman
Union.....	Howard Opdyke..	C. F. F. Garris...	Morland King.....	Warren C. Taylor	Morland King
Kansas.....	C. H. Ashton....	J. E. Todd.....	P. V. Faragher.....	W. J. Baumgartner	F. W. Bruckmuller
Yale.....	L. L. Woodruff...	H. L. Seward.....	T. A. Hatch.....	J. W. Roe.....	R. H. Suttle
Minnesota.....	C. O. Rosendahl..	L. W. McKeenan..	R. M. West.....	G. Dietrichson...	B. L. Newkirk
Nebraska.....	R. A. Lyman.....	M. L. Fossler....	H. M. Plum.....	A. L. Candy.....	N. A. Bangston
Ohio.....	Charles Sheard..	W. J. McCaughey..	C. T. Morris.....	C. T. Morris.....	F. W. Marquis
Pennsylvania...	W. P. Laird.....	C. E. McClung...	S. P. Shugert.....	W. H. F. Addison	J. P. Moore
Brown.....	H. E. Walter.....	H. E. Walter.....	R. G. D. Richardson	Harlan H. York..	C. H. Carrier
Iowa.....	J. N. Pearce.....	G. L. Houser.....	A. O. Thomas.....	G. L. Houser.....	M. C. Williams
Stanford.....	L. L. Burlingame..	W. K. Fisher.....	J. O. Snyder.....	J. O. Snyder.....	A. C. Alvarez
California.....	C. L. Cory.....	G. N. Lewis.....	T. C. Burnett.....	Edmond O'Neill..	W. W. Stifter
Columbia.....	G. B. Pegram.....	J. K. Finch.....	W. W. Stifter.....	Wm. Campbell...	H. B. Lemon
Chicago.....	C. J. Herrick.....	E. B. Frost.....	H. B. Lemon.....	H. B. Lemon.....	H. H. Higbie
Michigan.....	E. C. Case.....	A. M. Barrett...	H. A. Gleason....	H. A. Gleason....	H. H. Higbie
Illinois.....	W. A. Noyes.....	G. A. Goodenough	J. B. Shaw.....	J. B. Shaw.....	H. J. Van Cleave
Case.....	F. H. Vose.....	D. T. Wilson.....	M. E. Veazey.....	W. R. Veazey.....	C. D. Hodgman
Indiana.....	F. M. Andrews...	Wm. Scott.....	W. E. Hufford...	M. E. Hufford...	W. M. Tucker
Missouri.....	D. H. Dolley.....	M. F. Miller.....	H. C. Rentschler..	M. E. Hufford...	W. A. Tarr
Colorado.....	H. A. Curtis.....	R. D. Crawford..	W. C. Huntington..	W. C. Huntington	J. Hinderson
Northwestern...	W. L. Lewis.....	F. R. Zeit.....	E. J. Moulton.....	W. L. Woodburn..	S. I. Korhauser
Syracuse.....	R. A. Porter.....	F. P. Knowlton...	R. D. Whitney...	H. A. Clark.....	F. F. Decker
Wisconsin.....	C. E. Allen.....	L. J. Cole.....	Walter J. Meek...	Walter J. Meek...	M. O. Withey
Washington State	E. O. Eastwood...	G. B. Riggs.....	R. E. Rose.....	Effe I. Ratt.....	G. S. Wilson
Worcester.....	R. K. Morley.....	A. L. Smith.....	J. A. Bullard.....	Farrington Daniels	Morton Masius
Purdue.....	A. M. Kenyon....	R. G. Dukes.....	R. B. Wiley.....	C. M. Smith.....	A. T. Wiancko
Washington Univ.	P. A. Shaffer.....	C. A. Waldo.....	E. O. Sweetser...	I. M. Greenman...	L. F. Nickell
Dist. of Columbia	Marcus Benjamin	I. K. Phelps.....	M. W. Lyon, Jr....	M. W. Lyon, Jr....	D. R. Harper, 3rd
Texas.....	J. T. Patterson...	F. W. Simonds...	E. L. Dodd.....	I. M. Lewis.....	S. L. Brown

Including Chapter Reports received up to June 1, 1916.

OFFICIAL ANNOUNCEMENTS

QUARTER CENTURY RECORD AND HISTORY

According to the instructions given by the General Convention, a copy will be sent prepaid on receipt of \$2.50.

SIGMA XI QUARTERLY

Title Page and Table of Contents for Volume I, II, or III will be sent members or subscribers on request. A few extra copies of these volumes are to be had at the regular subscription price. Odd numbers will be sent members to fill gaps as long as the supply holds out.

PRINTED BLANKS

The General Convention has instructed the Secretary to keep for chapters a supply of printed blanks as enumerated below. According to instructions these are to be forwarded to chapters under the following stipulations:

Membership Certificates, stamped with the great seal of the Society. In packages of fifty prepaid, on advance payment of \$2.50 for each package.

Index Cards, on the condition that a duplicate set be sent for the general index of the Society maintained in the secretary's office. Gratis on demand.

Report Blanks, for submitting annual reports giving chapter officers, elections, and other statistical data. Gratis on demand.

Mailing Blanks, on which secretaries are requested to furnish once a year a correct list of mailing addresses of active members to be transmitted directly to the printer. Gratis on demand.

The mailing list should be sent in early in September and be valid for the academic year.